Operations & Asset Management

Integration of Industrial Data for Exchange Access and Sharing: Architecture Description

Matthew West
Shell Services International


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Contents

- Some Current Problems
- Requirements
- Integration Models
- Integration Architecture Overview
- Next Steps


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Current SC4 Problems

- **Incompatible set of standards**
- **AP-Interoperability**
- **Product Centricity**
- **Information Exchange vs Information Sharing**
- **File exchange vs data consolidation**


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Requirements

- **Provide an integration platform for SC4 standards, and with non-SC4 standards**
- **Support Data Integration & Sharing**
  - Encoding/decoding data elements
  - Consolidation of different data sets
  - Integration of different data models
  - Use of different data modelling languages


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SC4 Data Architecture Summary (1)

- **An additional (SC4) architecture for industrial data, not "the new STEP architecture"**
  - need not impact any other SC4 standard
  - other standards may migrate towards the new architecture as they see fit
- **Designed to enable the integration/translation of data from/between any STEP AP, P-LIB, MANDATE, Oil and Gas, any other model**


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SC4 Data Architecture Summary (2)

- **Key aspects of the architecture will be**
  - An Integration Model based on generic ideas
    - Extensibility required
    - Integration methodology required
  - Potential new implementation methods for data sharing and integration
  - Application View & Application Data Model
  - Projection Capability
  - Translation Capability between terminologies


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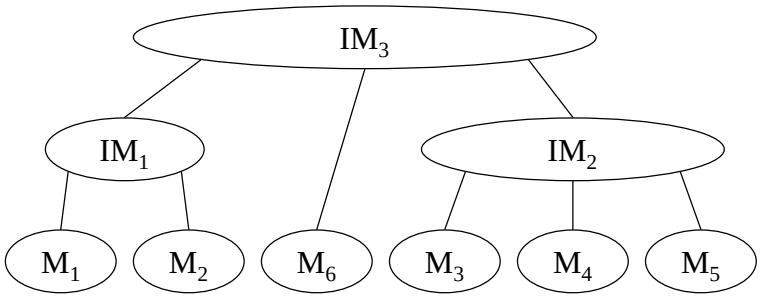
What is an “Integration Model”?

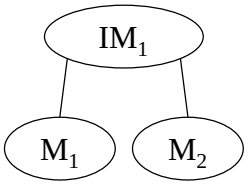
- **Integration model should provide a basis for:**
  - modelling at different levels of abstraction
  - managing change to the model
  - modelling of constraints
  - use of multiple modelling languages
- **Based on generic modelling concepts**
  - “Ontological” approach
  - Exploiting practical research results from computer science, AI, and philosophy

Integration models

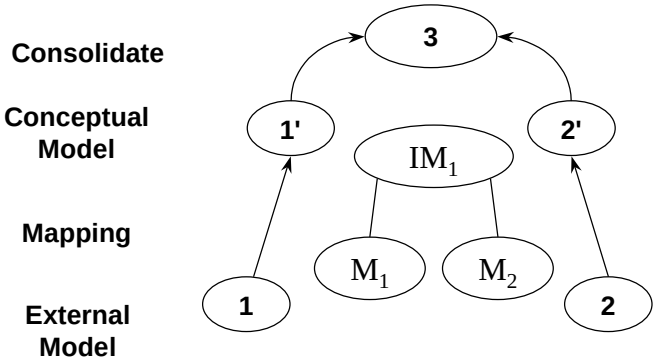


Integration and external models

- **"Mapping" process involves some or all of:**
  - subsetting
  - extension
  - projection
  - transformation
  - translation
  - encoding



Mapping to a Conceptual Model



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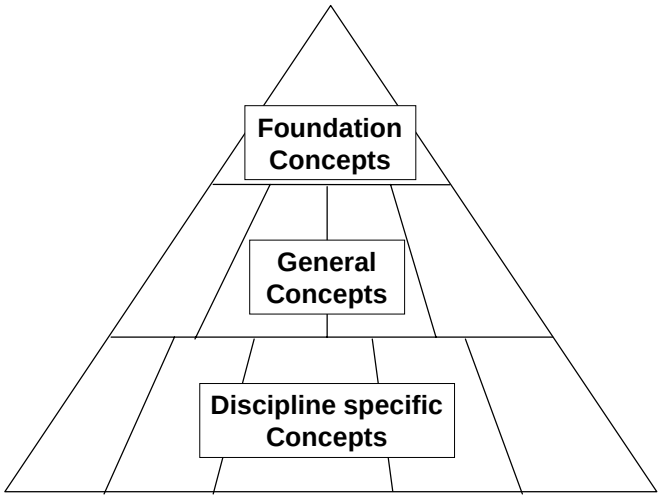
Base Concepts



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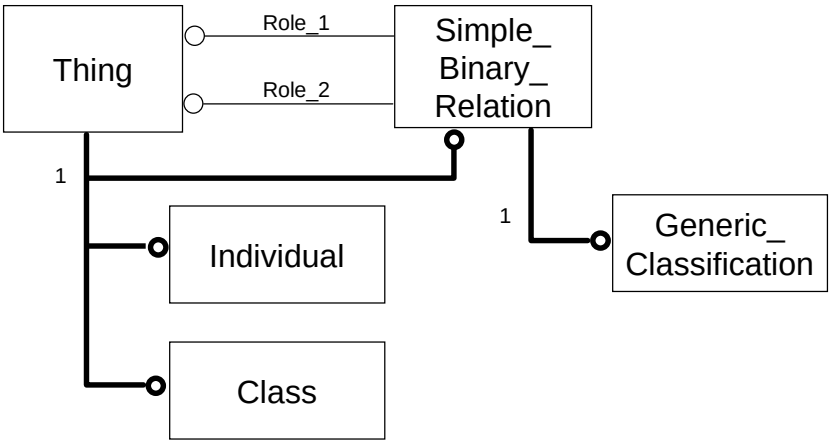
Some Foundation Level Concepts



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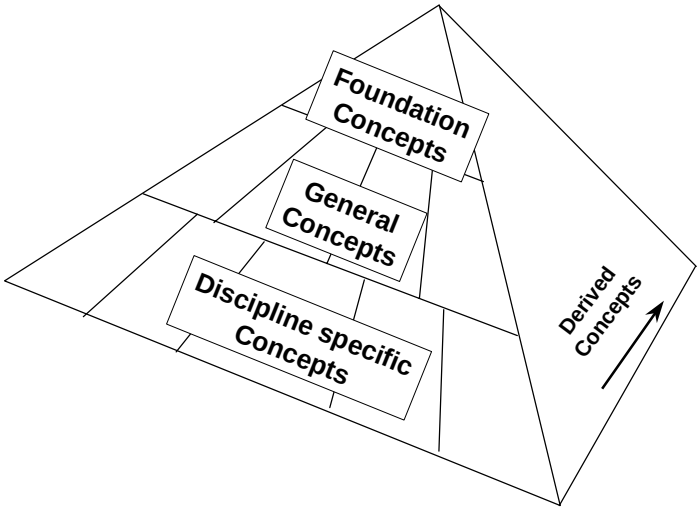
Derived Concepts



Application View

- **Subset of Integration Model**
- **May have additional constraints**
- **May have projection to “flat” model(s)**
- **May be mapped to external model**
  - usually simple mapping
  - e.g. STEP APs, PLib, MANDATE, UML models

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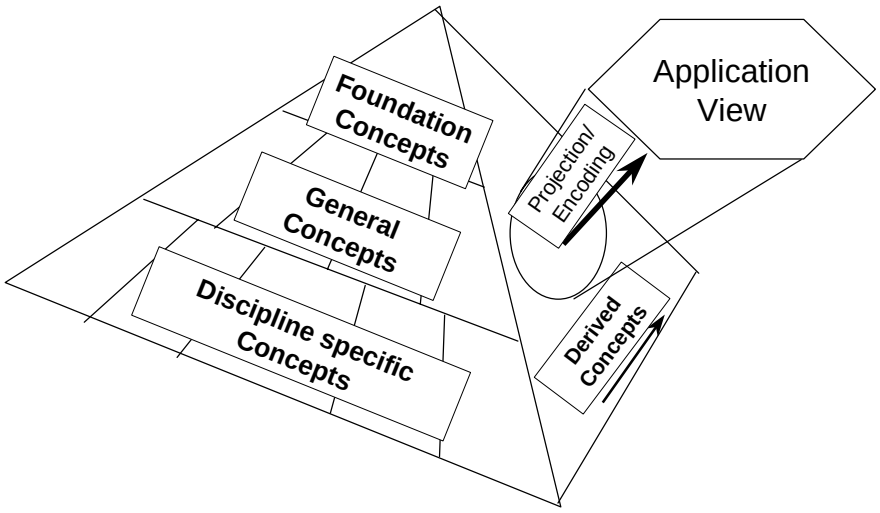
Integration Architecture



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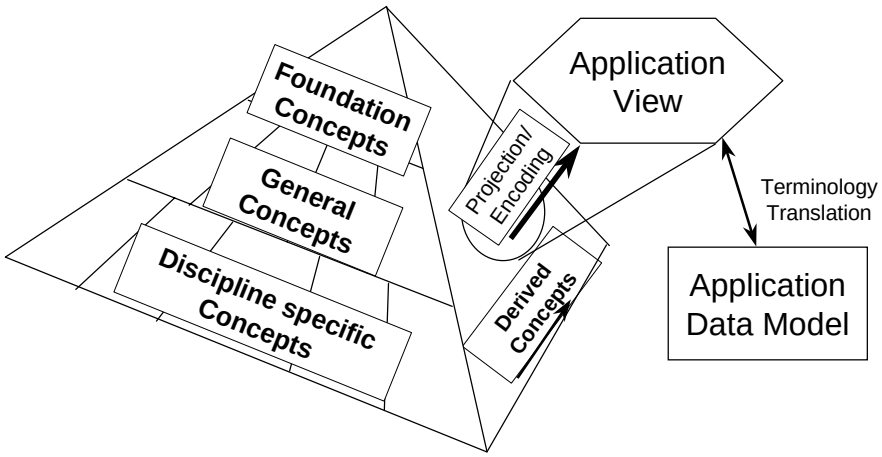
Integration Architecture



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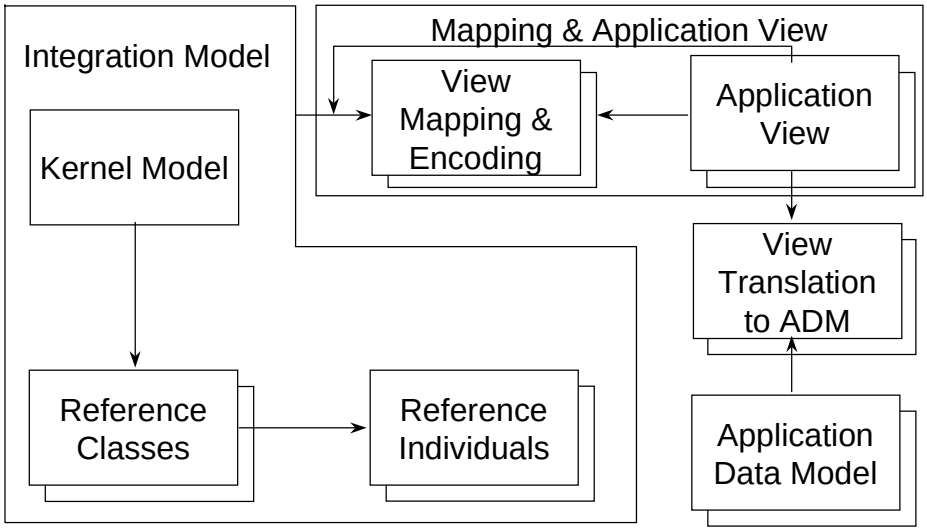
Organisation of Integration Architecture



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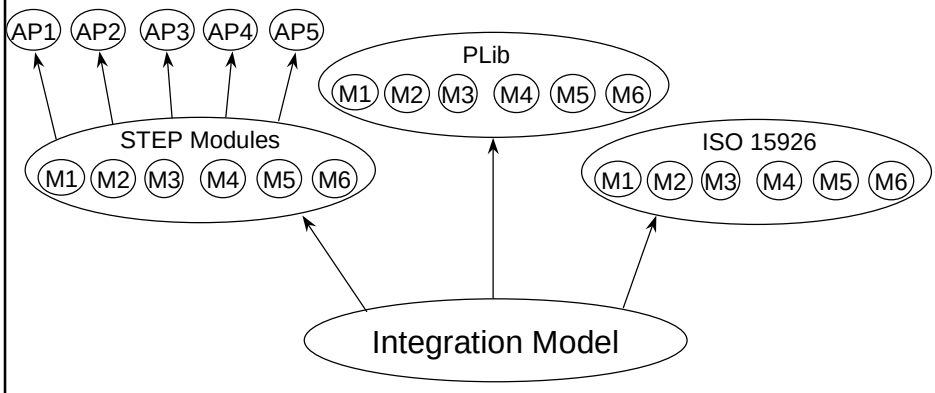
View Structure



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Time Scales (Provisional)

- **New Work Item Targeted for Q1 2000**
  - To include Working Draft of some parts
- **Committee Draft 2001**
- **Draft International Standard 2003**
- **International Standard 2005**
  - Initial parts only

Progress

- **Requirements for EXPRESS identified**
- **Integration Model initial layers drafted**
- **Integration methodology - drafted**

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Next Steps

- Demonstration
- Review Methodology and Integration Models
- Prepare NWI documents

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